PATENT SPECIFICATION 957,294

DRAWINGS ATTACHED.

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COMPLETE SPECIFICATION.

An Exchangeable Metering Valve.

We, HAARKOSMETIK UND PARFUMERIEN G.m.b.H., of 17–19 Wendtstrasse, Karlsruhe, Germany, a Body Corporate organised under the laws of Germany, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to an exchangeable metering valve for spraying or otherwise dispensing gas-pressurised liquids, foams or pastes, such as cosmetics, from a dispenser provided with an outlet valve.

Recently the use of spray dispensers for liquid or paste-like media has become increasingly popular. It has been found that the simple atomising valves with which every such dispenser is equipped, and which are thrown away when the empty dispenser is discarded, are not satisfactory if it is desired to discharge accurately metered quantities of liquid at a time. This requirement arises particularly in the application of cosmetics.

In order to satisfy this demand the present invention provides an exchangeable metering valve for spraying or otherwise dispensing a gas-pressurised liquid, foam or paste such as a cosmetic, from a dispenser equipped with an outlet valve, wherein a chamber is concentrically disposed inside a valve casing and is axially displaceable against the resistance of a spring, the chamber being provided with a push-on pipe connection adapted to be fitted over an outlet valve of the dispenser, and being formed with an opening on the side opposite said pipe connection for communication with the interior of the valve casing, and wherein a sealing element is provided for closing said opening when said chamber is relatively axially displaced by pressure applied to the valve casing in the direction towards the push-on pipe, there being a sealing element on the chamber normally covering the entry end, inside the valve casing, of an outlet pipe and serving to uncover said entry end when said chamber is relatively axially displaced, said opening being re-opened and the entry end of the outlet pipe being recovered when the pressure applied to the valve casing is removed.

In order to enable the invention to be more readily understood, reference will now be made to the accompanying drawings, which illustrates diagrammatically and by way of example a section through a metering valve constructed in accordance with the invention.

Referring now to drawing, the valve comprises a cylindrical valve casing 1 concentrically disposed within which is a chamber 2 provided with a push-on pipe 3 so contrived that it can be mounted on the container of a dispenser (not shown) by being fitted over an outlet valve of the container. The side of the chamber 2 opposite the end of the push-on pipe 3 is formed with an opening 4 which provides communication between the interior of the chamber 2 and the inside of valve casing 1. Inside the valve casing 1, facing the opening 4, is a sealing element 6 which closes the opening 4 when the chamber 2 is axially relatively displaced inside the valve casing 1 (in the direction of the arrow at the bottom of the drawing) against the resistance of a spring 5 when pressure is applied to the top of the valve casing 1 (in the direction of the upper arrow in the drawing). This axial displacement simultaneously causes a sealing element 7 on the chamber 2, which closes the inside end of an outlet pipe 8, to be lifted off the co-operating end of the outlet pipe, thereby provid-

[*Price 4s. 6d.*]

ing communication between the inside of the valve casing 1 and the outlet pipe.

Pressure applied axially to the valve casing 1 also results in the chamber 2 being displaced inside the valve casing 1 in such a way that the sealing element 6 closes the opening 4. If the pressure is now further increased the outlet valve on the dispenser is opened and some of the contents of the dispenser are forced into and fill the chamber 2. When the pressure on the valve casing is removed the outlet valve on the dispenser closes again, and the sealing element lifts off the opening 4, since the spring 5 pushes the chamber back into its former position. The composition which has filled the chamber 2 therefore flows through the opening 4 into the interior of the valve casing 1.

A second depression of the valve casing 1 causes more of the contents of the dispenser to flow into the chamber 2 until the pressures in the interior of the chamber and the interior of the dispenser have equalised. At the same time the medium inside the valve casing 1 is forced out of the outlet pipe 8 because the displacement of the chamber 2 causes the sealing element 7 to be raised from the end of outlet pipe 8. When the pressure on valve casing 1 ceases, some of the medium inside the chamber 2 again escapes through the opening 4 into the interior of the valve casing 1 until the pressures in both chambers are equal. The operations of filling and ejection or atomisation are therefore simultaneous.

Whenever the metering valve is operated as has been described, a predetermined quantity of the contents of the dispenser is therefore discharged, the exact quantity depending upon the pressure inside the dispenser and the capacities of chamber 2 and of the valve casing 1. By changing any one or more of these factors the desired quantity which will be discharged at each operation of the valve can be exactly preset. The metering valve can be mounted on any dispenser equipped with an outlet valve upon which the push-on pipe is designed to fit.

WHAT WE CLAIM IS:—

1. An exchangeable metering valve for spraying or otherwise dispensing a gas-pressurised liquid, foam or paste, such as a cosmetic, from a dispenser equipped with an outlet valve, wherein a chamber is concentrically disposed inside a valve casing and is axially displaceable against the resistance of a spring, the chamber being provided with a push-on pipe connection adapted to be fitted over an outlet valve of the dispenser, and being formed with an opening on the side opposite said pipe connection for communication with the interior of the valve casing, and wherein a sealing element is provided for closing said opening when said chamber is relatively axially displaced by pressure applied to the valve casing in the direction towards the push-on pipe, there being a sealing element on the chamber normally covering the entry end, inside the valve casing, of an outlet pipe and serving to uncover said entry end when said chamber is relatively axially displaced, said opening being re-opened and the entry end of the outlet pipe being recovered when the pressure applied to the valve casing is removed.

2. An exchangeable metering valve substantially as hereinbefore described with reference to the accompanying drawing.

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957294 COMPLETE SPECIFICATION

1 SHEET *This drawing is a reproduction of the Original on a reduced scale*